Seal Apparatus for a Water Pump, Rotation-support Apparatus for a Water Pump, and a Water Pump

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Technical Field of the Invention:

[0001] This invention relates to a seal apparatus for a water pump and a rotation-support apparatus for a water pump and a water pump, and more particularly to improvement of the seal apparatus of a water pump that is used for circulating coolant water for an automobile engine.

Background Technology

[0002] A water pump used for circulating coolant water for an automobile engine has been disclosed in Japanese Patent Publication No. Toku Kai Hei 8-254213, and is constructed as shown in Fig. 6. A cylindrical housing 1 has an installation flange 2 formed around its outer peripheral surface on the axial inside end (the inside with reference to the axial direction is the side nearest the engine, and is the right side in all of the figures) and fastened to the cylinder block of the engine by way of the installation flange 2. Provided on the radial inside of the housing 1 is a rolling-bearing unit 6 which comprises a ball bearing 4 on the axial inside end and a roller bearing 5 on the axial outside end (the outside with reference to the axial direction is the side furthest from the engine, and is the left side in all of the figures) in combination to support a rotating shaft 3